Claims

1. In a communications network, a system for providing wireless data services, said system comprising:

a) a plurality of mobile stations;

b) at least one packet data network;

c) a wireless access integrated node intermediating between the plurality of mobile stations and at least one packet data network, said wireless access integrated node having:

i) a plurality of mobile data transmission modules and signaling modules for sending, processing, and receiving data packets;

ii) a plurality of interfaces and ports for sending messages to and receiving messages from at least one packet data network, systems, and mobile stations interconnected with the wireless access integrated node;

iii) a database containing subscription and charging information for the plurality of mobile stations attached to the wireless access integrated node; and

iv) a main controller to collect charging data and coordinate and control said mobile data transmission modules, signaling modules, interfaces, and database;

d) a radio interface interconnecting the plurality of mobile stations and the wireless access integrated node; and

e) a network interface interconnecting the wireless access integrated node and at least one packet data network.

2. The system of claim 1 wherein the packet data network is the Internet.

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3. The system of claim 1 wherein the packet data network is an intranet.

4. The system of claim 3 wherein a content server is attached to the intranet.

5. The system of claim 1 wherein the mobile data transmission module is a PDCP module.

6. The system of claim 1 wherein the mobile data transmission module is a RLC/MAC module.

7. The system of claim 1 wherein the mobile data transmission module is a TRX module.

8. The system of claim 1 wherein the signaling module is Radio Resource Management.

9. The system of claim 1 wherein the signaling module is GPRS Mobility Management.

10. The system of claim 1 wherein the signaling module is Session Management.

11. The system of claim 1 wherein the interface is a voice interface.

12. The system of claim 1 wherein the interface is a local information system interface.

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13. The system of claim 1 wherein the interface is an appliance control interface.

14. The system of claim 1 wherein the interface is an intranet gateway.

15. The system of claim 1 wherein the port is an RJ11 port for a fixed wire telephone connection.

16. The system of claim 1 wherein the system interconnected with the wireless access integrated node is a local information system.

17. The system of claim 16 wherein the wireless access integrated node has means for remotely synchronizing a personal digital assistant with its host program on the local information system.

18. The system of claim 16 wherein the wireless access integrated node has a voice recognition means for audibly relaying service request commands from the mobile station to the local information system.

19. The system of claim 16 wherein the wireless access integrated node has a text-to-speech means for audibly relaying information from the local information service to the mobile station.

20. The system of claim 1 wherein the system interconnected with the wireless access integrated node is a local appliance system.

21. The system of claim 20 wherein the wireless access integrated node has a voice recognition means for audibly relaying remote control commands from the mobile station to the appliance control system.

22. The system of claim 20 wherein the wireless access integrated node has a text-to-speech means for audibly relaying an appliance status report delivered from the appliance control system to the mobile station.

23. The system of claim 1 wherein the system interconnected with the wireless access integrated node is a wireless data collector.

24. The system of claim 1 wherein the radio interface is a GPRS radio interface.

25. The system of claim 1 wherein the network interface is an IP interface.

26. The system of claim 1 further including means for enabling a mobile station user to obtain a temporary subscription to the wireless access integrated node through a dynamic registration and cancellation process in which the user's mobile station's secret subscription identity is linked with the user's mobile station's mobile equipment identity.

27. The system of claim 1 wherein the plurality of mobile data transmission modules includes means for modulating data packets.

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28. The system of claim 1 wherein the plurality of mobile data transmission modules includes means for compressing data packets.

29. The system of claim 1 wherein the plurality of mobile data transmission modules includes means for encrypting data packets.

30. The system of claim 1 wherein the plurality of mobile data transmission modules includes means for multiplexing data packets.

31. The system of claim 1 wherein the plurality of mobile data transmission modules includes means for correcting errors in data packets.

32. The system of claim 1 wherein the plurality of mobile data transmission modules includes means for segmenting data packets.

33. The system of claim 1 wherein the plurality of mobile data transmission modules includes means for controlling the sequence of data packets.

34. The system of claim 1 wherein the wireless access integrated node includes means for supporting mobile stations roaming between a local wireless access integrated node environment and a public mobile network.

35. The system of claim 1 wherein the wireless access integrated node includes means for supporting mobile stations roaming between different wireless access integrated node systems.

36. The system of claim 1 wherein the wireless access integrated node includes means for providing wireless data services in a community service area located within cells of a public network when the wireless access integrated node is clustered with several other wireless access integrated node systems.

37. The system of claim 1 wherein the wireless access integrated node supports mobile stations roaming between different wireless access integrated node systems.

38. The system of claim 1 wherein the wireless access integrated node includes means for configuring said wireless access integrated node as a network node where no specified system parameters are present.

39. In a communications network, a device for providing access to wireless data services, said device comprising:

a) a plurality of mobile data transmission modules and signaling modules for sending, processing, and receiving data packets;

b) a plurality of interfaces and ports for sending messages to and receiving messages from at least one packet data network, systems, and mobile stations interconnected with said device;

c) a database containing subscription and charging information for the plurality of mobile stations attached to said device; and

d) a main controller to collect charging data

and coordinate and control said mobile data transmission modules, signaling modules, interfaces, port, and database;

wherein the device intermediates between the plurality of mobile stations and at least one packet data network.

40. The device of claim 39 wherein the packet data network is the Internet.

41. The device of claim 39 wherein the packet data network is an intranet.

42. The device of claim 41 wherein a content server is attached to the intranet.

43. The device of claim 39 wherein the mobile data transmission module is a PDCP module.

44. The device of claim 39 wherein the mobile data transmission module is a RLC/MAC module.

45. The device of claim 39 wherein the mobile data transmission module is a TRX module.

46. The device of claim 39 wherein the signaling module is a radio resource management module.

47. The device of claim 39 wherein the signaling function is a GPRS mobility management module.

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48. The device of claim 39 wherein the signaling module is a session management module.

49. The device of claim 39 wherein the interface is a voice interface.

50. The device of claim 39 wherein the interface is a local information system interface.

51. The device of claim 39 wherein the interface is an appliance control interface.

52. The device of claim 39 wherein the interface is an intranet gateway.

53. The device of claim 39 wherein the port is an RJ11 port for a fixed wire telephone connection.

54. The device of claim 39 wherein the system interconnected with the device is a local information system.

55. The device of claim 39 further including a voice recognition subsystem.

56. The device of claim 39 further including a text-to-speech synthesis subsystem.

57. The device of claim 39 wherein the system interconnected with the device is a local appliance control system.

58. The device of claim 39 wherein the system interconnected with the device is a wireless data collector.

59. The device of claim 39 wherein the radio interface is a GPRS radio interface.

60. The device of claim 39 wherein the network interface is an IP interface.

61. The device of claim 39 wherein the plurality of mobile data transmission modules includes means for modulating data packets.

62. The device of claim 39 wherein the plurality of mobile data transmission modules includes means for compressing data packets.

63. The device of claim 39 wherein the plurality of mobile data transmission modules includes means for encrypting data packets.

64. The device of claim 39 wherein the plurality of mobile data transmission modules includes means for multiplexing data packets.

65. The device of claim 39 wherein the plurality of mobile data transmission modules includes means for correcting errors in data packets.

66. The device of claim 39 wherein the plurality of mobile data transmission modules includes means for segmenting data packets.

67. The device of claim 39 wherein the plurality of mobile data transmission modules includes means for controlling the sequence of data packets.

68. The device of claim 39 further including means for configuring said device as a network node where no specified system parameters are present.

69. In a communications network, a method for configuring a wireless access integrated node as a network node where no specified system parameters are present, said method comprising:

a) initializing a wireless access integrated node as a mobile station;

b) searching for radio transmission from broadcast control channel carriers in surrounding cells;

c) locking on to each of said carriers;

d) detecting and decoding system parameters used in surrounding cells;

e) selecting a set of system parameters to minimize interference between a plurality of wireless access integrated nodes or between a wireless access integrated node and other cells; and

f) configuring said wireless access integrated node as a network node using said set of system parameters;

wherein the initializing, searching, locking, detecting, selecting, and configuring steps are performed by the wireless access integrated node.

70. The method of claim 69 wherein a system parameter is carrier frequency.

71. The method of claim 69 wherein a system parameter is spreading code for CDMA systems.

72. The method of claim 69 wherein a system parameter is Cell ID.

73. The method of claim 69 wherein a system parameter is Routing Area ID.

74. The method of claim 69 wherein a system parameter is transmission power level.